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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,256	11/16/2005	Paul Weaver	PBT.P0004	8735

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EXAMINER

ROSENAU, DEREK JOHN

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/511,256

Applicant(s)

WEAVER ET AL.

Examiner

Derek J. Rosenau

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/25/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 1/25/05 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

2. The drawings are objected to because there are no reference numerals in the specification or drawings for the subject matter shown in Fig 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.

- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-15 are rejected under 35 U.S.C. 102(a) as being anticipated by Weaver et al.

(Extended temperature range piezo actuator system with very large movement).

6. With respect to claim 1, Weaver et al. discloses a control circuit (Fig 13) for controlling the operation of a piezo ceramic actuator (Fig 13, Piezo) comprising means for applying a voltage to the piezo ceramic actuator (Fig 13, H-Bridge), the voltage applying means being arranged such that a charge is applied to the piezo ceramic device which in turn produces a displacement of the piezo ceramic device (Abstract), characterized in that the voltage applying means is arranged to apply a reverse bias voltage to the actuator (page 488, section 5).

7. With respect to claim 2, Weaver et al. discloses the control circuit according to claim 1, further comprising means of controlling a piezoelectric actuator including a means for generating a control signal indicative of the temperature (Fig 13, T Sensor) of the actuator and means for altering the amount of reverse bias voltage as a function of the control signal (page 488, section 5).

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8. With respect to claims 3 and 8, Weaver et al. discloses that the means for applying a voltage includes an H-bridge (Fig 13, H-Bridge).
9. With respect to claims 4 and 9, Weaver et al. discloses that the H-bridge is provided with a plurality of switches arranged to charge and discharge the piezo ceramic device (Fig 13, H-Bridge).
10. With respect to claims 5 and 10, Weaver et al. discloses that the control circuit according to claim 4, wherein the plurality of switches are transistor switches (Fig 13, H-Bridge).
11. With respect to claim 7, Weaver et al. discloses the piezo ceramic actuator arrangement according to claim 1, comprising a piezo ceramic actuator (Fig 13, Piezo) and a control circuit (item Fig 13, Micro-Controller).
12. With respect to claims 6 and 11-15, Weaver et al. discloses that the H-bridge is configured to apply a reverse bias voltage to the actuator (page 488, section 5).
13. Claims 1, 3-7, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada (US 6483226).
14. With respect to claim 1, Okada discloses a control circuit (Fig 7) for controlling the operation of a piezo ceramic actuator (item 3) comprising means for applying a voltage to the piezo ceramic actuator (item 12), the voltage applying means being arranged such that a charge is applied to the piezo ceramic device which in turn produces a displacement of the piezo ceramic device (column 3, lines 27-34), characterized in that the voltage applying means is arranged to apply a reverse bias voltage to the actuator (column 3, lines 35-45).
15. With respect to claim 3, Okada discloses the control circuit according to claim 1, wherein the means for applying a voltage includes an H-bridge (Fig 7).

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16. With respect to claim 4, Okada discloses the control circuit according to claim 3, wherein the H-bridge is provided with a plurality of switches arranged to charge and discharge the piezo ceramic device (Fig 7 and column 3, lines 35-45).

17. With respect to claim 5, Okada discloses the control circuit according to claim 4, wherein the plurality of switches are transistor switches (Fig 7).

18. With respect to claims 6, 12, and 14, Okada discloses that the H-bridge is configured to apply a reverse bias voltage to the actuator (column 3, lines 35-45).

19. With respect to claim 7, Okada discloses the piezo ceramic actuator arrangement according to claim 1, comprising a piezo ceramic actuator (item 3) and a control circuit (item 10).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. Claims 2 and 8-11, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada in view of Hasegawa et al. (US 6486743).

22. With respect to claim 2, Okada discloses the control circuit according to claim 1.

Okada does not disclose expressly a means for generating a control signal indicative of the temperature of the actuator and means for altering the amount of reverse bias voltage as a function of the control signal.

Hasegawa et al. teaches a means of controlling a piezoelectric actuator including a means for generating a control signal indicative of the temperature (Fig 1, item 34) of the actuator and means for altering the amount of reverse bias voltage as a function of the control signal (item 28B and column 6, lines 57-62).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the temperature compensation means of Hasegawa et al. with the control circuit of Okada for the benefit of adjusting for changes caused by a change in temperature (column 6, lines 57-62).

23. With respect to claim 8, the combination of Okada and Hasegawa discloses the control circuit according to claim 2. Okada discloses that the means for applying a voltage includes an H-bridge (Fig 7).

24. With respect to claim 9, the combination of Okada and Hasegawa discloses the control circuit according to claim 8. Okada discloses that the H-bridge is provided with a plurality of switches arranged to charge and discharge the piezo ceramic device (Fig 7 and column 3, lines 35-45).

25. With respect to claim 10, the combination of Okada and Hasegawa discloses the control circuit according to claim 9. Okada discloses that the plurality of switches are transistor switches (Fig 7).

26. With respect to claims 11, 13, and 15, Okada discloses that the H-bridge is configured to apply a reverse bias voltage to the actuator (column 3, lines 35-45).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is 571-272-8932. The examiner can normally be reached on Monday thru Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Derek J Rosenau
Examiner
Art Unit 2834

DJR
5/31/06

